

**What is Claimed is:**

1. An integrated circuit comprising:  
a substrate;  
a first insulating layer on the substrate that includes therein a first hole passing therethrough that includes a floor adjacent the substrate and a sidewall;  
5 a first conductive contact that extends conformally on the sidewall and floor to define a groove in the first hole;  
a second insulating layer on the first insulating layer remote from the substrate that includes therein a second hole passing therethrough that exposes the groove; and  
a second conductive contact in the second hole and in the groove.  
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2. An integrated circuit according to Claim 1 wherein the floor is directly on the substrate.
3. An integrated circuit according to Claim 1 wherein the second  
15 conductive contact fills the second hole and the groove.
4. An integrated circuit according to Claim 1 wherein the first conductive contact comprises a first barrier layer on the sidewall and floor and a first conductive layer on the first barrier layer remote from the sidewall and floor and wherein the  
20 second conductive contact comprises a second barrier layer on the first conductive layer and a second conductive layer on the second barrier layer remote from the first conductive layer.
5. An integrated circuit according to Claim 4 wherein the first and second  
25 barrier layers comprise titanium and/or titanium nitride and wherein the first and second conductive layers comprise tungsten.
6. An integrated circuit according to Claim 1 wherein the first conductive contact also extends onto the first insulating layer outside the first hole.  
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7. An integrated circuit according to Claim 1 wherein the second conductive contact also extends onto the second insulating layer outside the second hole.

8. An integrated circuit according to Claim 1:  
wherein the first insulating layer includes a third hole and a fourth hole  
passing therethrough; and  
5 wherein the second insulating layer includes a fifth hole passing therethrough  
that exposes the fourth hole;  
the integrated circuit further comprising:  
a third conductive contact in the third hole; and  
a fourth conductive contact in the fourth and fifth holes.
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9. An integrated circuit according to Claim 8 further comprising:  
a third insulating layer on the second insulating layer remote from the first  
insulating layer that includes therein a sixth hole that exposes the second hole;  
the second conductive contact further extending into the sixth hole.
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10. An integrated circuit according to Claim 8 further comprising:  
a capacitor on the second insulating layer that is electrically connected to the  
fourth conductive contact.
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11. An integrated circuit according to Claim 9 wherein the second  
conductive contact also extends onto the third insulating layer outside the sixth hole.
12. An integrated circuit according to Claim 8 wherein the first hole is at  
least twice as wide as the third hole.
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13. A method of fabricating an integrated circuit comprising:  
forming a first insulating layer on a substrate;  
forming a first hole passing through the first insulating layer and including a  
floor adjacent the substrate and a sidewall;  
30 conformally forming a first conductive contact on the sidewall and floor to  
define a groove in the first hole;  
forming a second insulating layer on the first insulating layer remote from the  
substrate;

forming a second hole passing through the second insulating layer and exposing the groove; and

forming a second conductive contact in the second hole and in the groove.

5           14.     A method according to Claim 13 wherein the step of forming a first insulating layer on a substrate comprises forming a first insulating layer directly on the substrate such that the floor is directly on the substrate.

10           15.     A method according to Claim 13 wherein the step of forming a second conductive contact comprises forming a second conductive contact to fill the second hole and the groove.

            16.     A method according to Claim 13:  
            wherein the step of conformally forming a first conductive contact comprises  
15     forming a first barrier layer on the sidewall and floor and forming a first conductive layer on the first barrier layer remote from the sidewall and floor; and  
            wherein the step of forming a second conductive contact comprises forming a second barrier layer on the first conductive layer and forming a second conductive layer on the second barrier layer remote from the first conductive layer.

20           17.     A method according to Claim 16 wherein the first and second barrier layers comprise chemical vapor deposited titanium and/or titanium nitride and wherein the first and second conductive layers comprise chemical vapor deposited tungsten.

25           18.     A method according to Claim 13 wherein the step of conformally forming a first conductive contact comprises conformally forming a first conductive contact on the sidewall and floor and extending onto the first insulating layer outside the first hole.

30           19.     A method according to Claim 13 wherein the step of forming a second conductive contact comprises forming a second conductive contact in the second hole, in the groove and extending onto the second insulating layer outside the second hole.

20. A method according to Claim 13:

wherein the step of forming a first hole passing through the first insulating layer and including a floor adjacent the substrate and a sidewall further comprises forming a third hole passing through the first insulating layer;

5 wherein the step of conformally forming a first conductive contact comprises conformally forming a first conductive contact on the sidewall and floor to define a groove in the first hole and simultaneously forming a third conductive contact in the third hole;

10 wherein the step of forming a second insulating layer is followed by forming a third insulating layer on the second insulating layer remote from the first insulating layer that includes therein a sixth hole that exposes the second hole; and

wherein the step of forming a second conductive contact comprises forming a second conductive contact in the second hole, in the groove and in the sixth hole.

15 21. A method according to Claim 20 further comprising:

forming a fifth hole in the second insulating layer;

forming a fourth hole in the first insulating layer beneath the fifth hole; and

forming a fourth conductive contact in the fourth and fifth holes.

20 22. A method according to Claim 21 further comprising:

forming a capacitor on the second insulating layer that is electrically connected to the fourth conductive contact.

23. A method according to Claim 20 wherein the step of forming a second  
25 conductive contact further comprises forming a second conductive contact in the second hole, in the groove, in the sixth hole and extending onto the third insulating layer outside the sixth hole.

24. A method according to Claim 20 wherein the first hole is at least twice  
30 as wide as a thickness of the conformal first conductive contact.

25. A method according to Claim 13 wherein:

the step of conformally forming a first conductive contact on the sidewall and floor to define a groove in the first hole further comprises forming a third contact hole passing through the first insulating layer; and

5 wherein the step of conformally forming a first conductive contact comprises conformally forming a first conductive contact on the sidewall and floor to define a groove in the first hole and simultaneously forming a third conductive contact in the third hole.

26. A method according to Claim 25 wherein the step of conformally  
10 forming a first conductive contact on the sidewall and floor to define a groove in the first hole and simultaneously forming a third conductive contact in the third hole comprises:

conformally forming a barrier layer conductive layer on the sidewall and floor and in the third contact hole;

15 forming a conductive layer on the barrier layer in the first hole to define the groove and on the barrier layer in the third hole to fill the third hole; and

patterning the barrier layer conductive layer and the conductive layer to form the first conductive contact and the third conductive contact.

20 27. An integrated circuit according to Claim 4 wherein the first insulating layer includes a third contact hole and a fourth contact hole passing therethrough; and

wherein the second insulating layer includes a fifth hole passing therethrough that exposes the fourth hole;

the integrated circuit further comprising:

25 a third conductive contact in the third contact hole; and

a fourth conductive contact in the fourth and fifth holes.

28. An integrated circuit according to Claim 7 wherein the third  
conductive contact comprises a third barrier layer that extends conformally inside the  
30 third contact hole and a third conductive layer on the third barrier layer.

29. An integrated circuit according to Claim 27 wherein the third conductive contact also extends onto the first insulating layer outside the third contact hole.

30. An integrated circuit according to Claim 27 wherein the first hole is at least twice as wide as the first conductive contact.